

# ON SOME ORIBATID MITES FROM JAVA

## PART. I

BY Marie HAMMER \*

The material on which this investigation is based was collected in 1969 and in 1973-74. The majority of it was dealt with in a treatise : Investigations on the Oribatid Fauna of Java (1979). To reduce the volume of this treatise, certain groups of families were omitted, being left for later treatment. These were the Otocephoidea, Phthiracaroida, Euphthiracaroida, Galumnoidea, the Scheloribates with related genera (subgenera), and a few species that appeared later on.

The present work describes representatives of the Otocephidae as well as two species outside this family. In the description of the members of the Otocephidae, I have used the terms introduced by AOKI, 1965, pp. 264-266.

The number of individuals found in each sample is given in brackets after the biotope number.

To the Danish Research Foundation, who paid my travelling and other expenses, and to the Carlsberg Foundation, who covered my expenses during the preparation of the material, I owe an immense debt of gratitude.

Mrs Jennifer PARIS undertook the translation of part of the manuscript and assisted me with a revision of the remainder. For this I thank her most cordially.

### DESCRIPTIONS OF THE BIOTOPES

No. 1-25. Central Java. December 1973. Kaliurang, Pawangan Mountains, about 25 km north of Jogjakarta, some 700 m.a.s.l. Wood on mountain slope with thick undergrowth of short bamboo and shrubs; Selaginella, ferns, liverworts, mosses on dead branches and roots and the soil, dead leaves. Rich epiphyte flora.

— 27. Near Borobudur. Roadside with dry grass.

(— 28-100 Bali).

— 101-124. East Java. Selecta Park near Malang, about 1 100 m.a.s.l. Mountain slope with scattered,

tall trees and shrubs; ferns, liverworts, Selaginella, mosses on branches and roots, different small plants and dead leaves.

— 125-136. Central Java. Rahu Baka, rounded summit of limestones, about 200 m above the lowland, and about 17 km from Jogjakarta. Mainly grassland with ferns, mosses and dead leaves.

— 137-144. West Java. Bandung. Roadside with grass; grass and dead leaves in a park in Bandung.

— 145-150. Pengalengan, about 40 km south of Bandung; dead leaves of 10-20 year old tea bushes.

— 151-160. Situcilenca Lake, dammed; about 5 km west of Pengalengan; luxurious grass, small plants and mosses.

— 161-168. Tangkuban Prah, a volcano about 28 km north of Bandung, about 1 830 m.a.s.l. Deciduous forest with luxurious undergrowth of bamboo, shrubs, ferns, mosses, etc., dead leaves.

— 169-172. Grass and half-rotten hay on the roadside, not far from the previous locality.

— 173-180. Along an almost dry brook running through a luxurious forest with tree ferns, Zingiber sp., shrubs, dead tree trunks, mosses and dead leaves, debris of various kinds.

— 181-184. Pinus forest with dead needles, about 1 100 m.a.s.l.

— 185-204. Botanical Garden at Bogor with very tall, dark trees, dense undergrowth and numerous bushes and flowers; mosses every-where, lichens, liverworts, Selaginella, dead leaves and debris.

— 205-233. Botanical Garden at Tjibodas and rain-forest reservation, about 45 km southeast of Bogor and about 1 450 m.a.s.l., the reservation up to 3 000 m.a.s.l.; very wet, much rain. Rich epiphyte flora of orchids, lichens and mosses; ferns, mosses on roots and branches, liverworts, Selaginella, decaying leaves and debris, wet, dead leaves. (220-226 about 2 400 m.a.s.l.; dead leaves, mosses and epiphytic plants).

\* D.K. 3480, Fredensborg (Denmark).

## OTOCEPHEIDAE

### SUBFAMILY OTOCEPHEINAE

**Otocephus (Acrotocephus) macrodentatus** n. sp.; fig. 1.

Length about 0.98 mm. Colour light brown.

*Prodorsum* : The rostrum is triangular, the outer membrane broader and flatter. The rostral setae, inserted laterally on the rostrum, are curved, barbed, half their length extending in front of the rostrum. Spa.1 narrow, reaching the rostral setae. Lamellar setae inserted laterally to the lamellae and a short distance behind the tip of the latter, their tip strongly curved. The interlamellar setae, which are inserted a very short distance in front of the pseudostigmata, are stiff, thick and long a little more than twice their mutual distance. The anterior part of the lamellae is slightly convergent. The dorsal pseudostigmatic plates cover the pseudostigmata. The ventral pseudostigmatic plates are triangular with a slight notch in the anterior margin. Sensillus has a slightly thickened fusiform head, fig. 1a. Exopseudostigmatic setae short, slightly curved. Interlamellar wrinkles (rin) present as four longitudinal ridges, two close together between the interlamellar setae and one on either side laterally to the latter. Lateral prodorsal condyles (co.pl) are well developed, semicircular in shape, reaching the outer part of the lateral notogastral condyles (co.nl). Median prodorsal condyles (co.pm) slightly narrower, almost reaching the inner or medial part of co.nl.

*Pedotecta* : Pd.1 distinctly foveolate. Laterally, the Subpedotectum (spd) runs into one with pd.1, carrying the minute seta 1c. Pd. 2-3 granulate, the posterior part with alveoles. Pd.4 angular, protruding laterally beyond pd.2-3.

*Notogaster* : Anterior border slightly curved. The notogaster is broadest across ms-ms. The surface is coarsely punctate. There is a marginal ridge (vm) for the whole length of notogaster.

Lateral notogastral condyles (co.nl) very large, with two anterior notches for the prodorsal condyles. Their medial margin continues backwards almost to te. The space between them is about half as wide as the width of the condyles off ta. Ten pairs of notogastral setae. The setae are stiff, thick, pointed at the tip, weakly barbed, directed outwards and not equally long. Te, ti and p3 are about as long as the distance ta-ta. The others are a little longer, apart from r3, which is much smaller and thinner. Glandular opening located almost on the level of ti. The fissure ia is located transversally off ta, im immediately in front of gla, ih on a level with ms, ips in front of p3, and ip between p2 and p3.

*Epimeral region* : Apo.2 and apo.sj distinctly developed, fig. 1b. The sternal ridge (c.st) is a short ridge in the posterior part of ep.1. It is faintly connected with apo.2. Apo.2 and apo.sj from the two sides do not meet. Apo.3 and 4 not developed. Epimeral setal formula 3 : 1 : 2 : 3, 3b were not observed, probably missing. The epimeral setae are smooth, 4a apparently the longest. 1a, 1c, 2a, 3a and 4c are short.

*Anogenital region* : Genital aperture slightly wider anteriorly than posteriorly. Four pairs of genital setae. Smooth, brown genital plates. Aggenital setae almost as short as the genital setae. Anal aperture roughly square in outline. The long, smooth anal setae are located far posteriorly. Adanal fissure iad aligned differently on the two sides of the only specimen found, one longitudinally, the other transversally. Adanal setae curved medially. Ad1 and ad2 are shorter and thicker than the anal setae. Ad3 is much shorter than the former two. The distance ad1-ad2 is about half as long as ad1-ad1. The distance ad2-ad3 is shorter than ad1-ad1.

*Legs* : The setae (u) are normal on Tarsus I; on Tarsi II, III, and IV they are short and blunt.

221 (1).

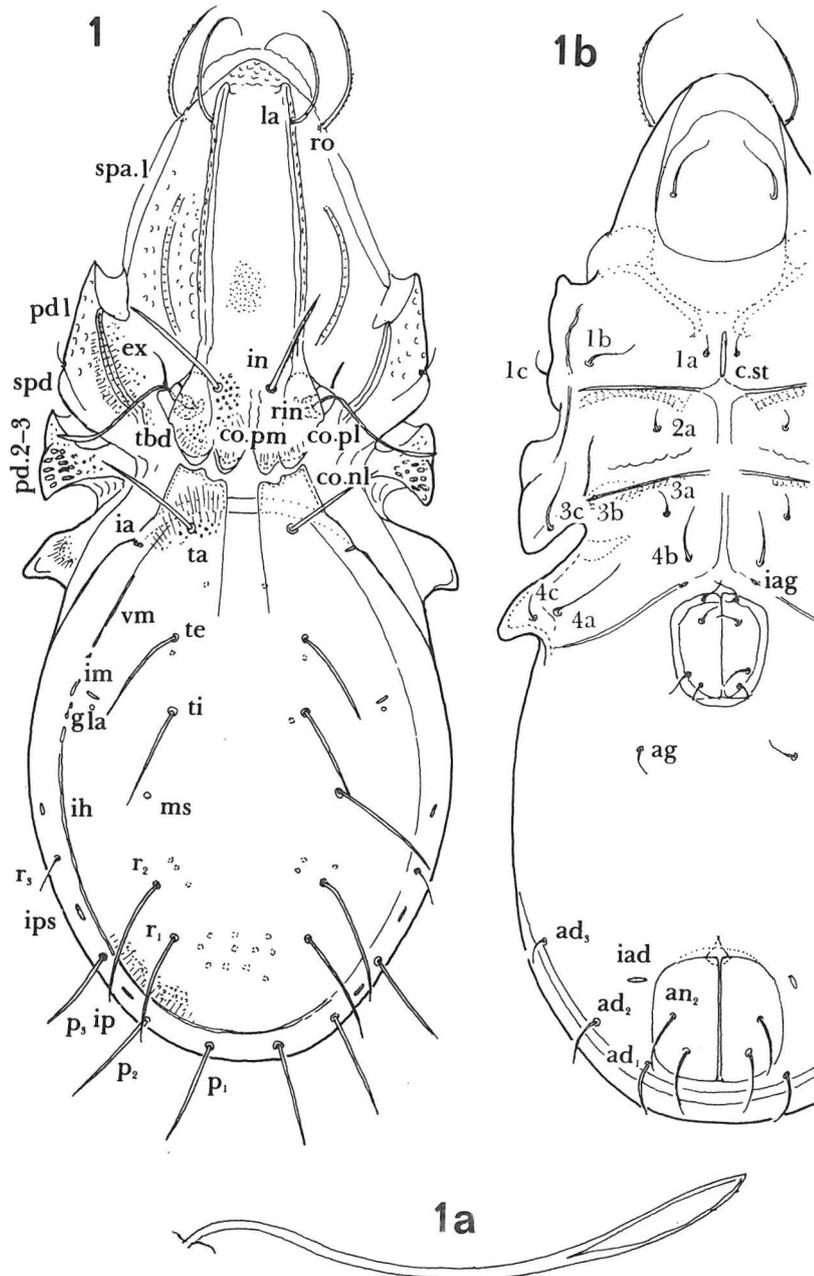


FIG. 1 : *Otocephus (Acrotocephus) macrodentatus* n. sp.  
1a) sensillus ; 1b) ventral view.

*Otocephus (Acrotocephus) caudatus* n. sp. ;  
fig. 2.

Length about 0.92 mm. Colour greyish light brown.

*Prodorsum* : Rostrum rounded. Rostral setae bent medially, densely barbed. Lamellar setae

with the tips bent medially. Interlamellar setae are inserted at some distance in front of the pseudostigmata. They are stiff, barbed and a little longer than twice their mutual distance. The lamellae are rather broad, slightly convergent at their anterior end. Spa.1 are narrow, slightly convex, reaching the insertion of the rostral setae. Dorsal pseudostigmatic plates cover the pseudo-

stigmata. Ventral pseudostigmatic plates are triangular, with an incurvation in their anterior margin. Sensillus very slender with a slightly thickened, fusiform head ending in a sharp tip, fig. 2a. No exopseudostigmatic setae. Interlamellar wrinkles displayed as two curved ridges issuing laterally to the interlamellar setae and continuing backwards. Lateral prodorsal condyles are broad,

indistinctly bilobate. Median prodorsal condyles small, rounded, touching and separated from co.pl by a deep incurvation.

*Pedotecta* : Pd.1 coarsely foveolate. Subpedotectum laterally separated from pd.1 by a notch. Pd.2-3 with a notch in the middle of the lateral border, the posterior part with large alveoles. Only the tip of pd.4 is visible in a dorsal view.

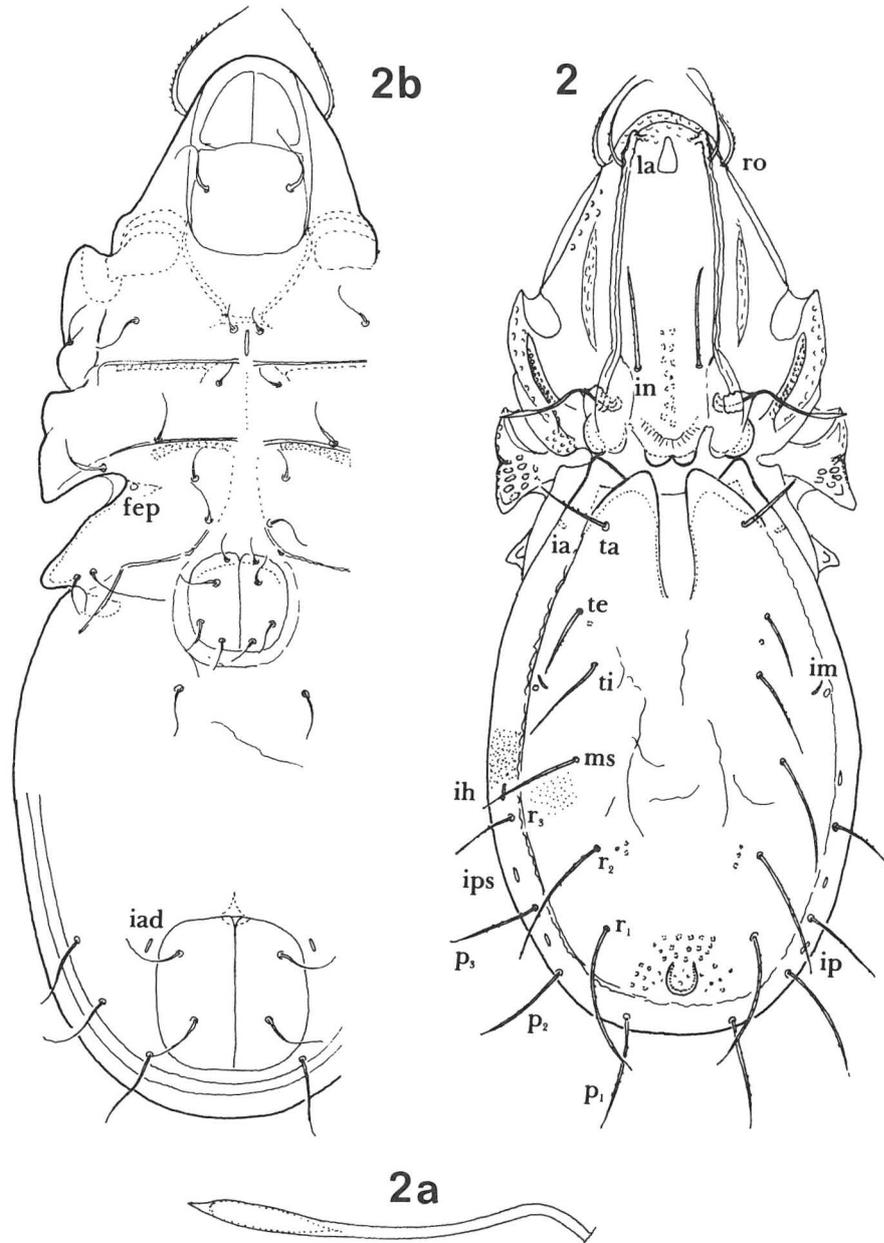


FIG. 2 : *Otocephus (Acrotocephus) caudatus* n. sp.  
2a) sensillus ; 2b) ventral view.

*Notogaster* : The anterior border concave. The surface is densely and minutely punctate, also showing wrinkles and a few dark spots. Notogaster is broadest across a line ms-ms. There is a marginal ridge for the whole length of the notogaster. Lateral notogastral condyles with two very strong teeth, the outer triangular in shape, the inner broad, conical with its medial border continuing almost to a level with te. The outer corresponds to the outer lobe of co.pl., the inner to co.pm. Debris is accumulated in the space between the prodorsal and the notogastral condyles. Ten pairs of stiff, weakly barbed notogastral setae. R1 and r2, the longest. Ms, p1 and p2 are slightly shorter. Ta, te and r3 are about half long as r1. Ti and p3 are a little longer than the latter three. Glandular opening situated almost at a level with ti. The fissure ia is located transversally off ta, im immediately in front of gla, ih in front of r3, ips in front of p3, and ip between p2 and p3. A round "tail-like" structure is located at the posterior end of the notogaster behind r1, surrounded by small dark spots (hence the specific name).

*Epimeral region* : Apo.2 and apo.sj distinctly developed, not meeting those from the opposite side, fig. 2b. Sternal ridge very short, located between the setae 1a. Epimeral setal formula 3 : 1 : 3 : 3. The setae are smooth, thin and curved, most of them rather short, the longest being 4a.

*Anogenital region* : Genital aperture slightly wider anteriorly than posteriorly, surrounded by a yellowish frame. Smooth and brown genital plates. Four pairs of smooth, curly, moderately long genital setae. Aggenital setae not much longer than genital setae. Anal aperture with parallel sides. An2 located near the anterior border, an1 in the middle of the posterior third of the plates. They bend outwards in a curve. Adanal setae, located on a line along the lateral margin of the ventral plate, are smooth, curved. Ad1 and ad2 are equally long, ad3 shorter. The distance ad1-ad2 is approximately the same as ad2-ad3. Ad1-ad1 is twice as long. Iad located obliquely off an2

*Legs* : Type of ultimate setae L-S-S-S.  
2 (2), 3 (1), 13 (1), 14 (1).

? *Megalotocepheus nigrolobatus* n. sp. ; fig. 3.

Length about 1.10 mm. Colour chestnut brown to blackish.

*Prodorsum* : Rostrum conical, the surrounding membrane broadly rounded. The rostral setae follow the outline of the latter, finely barbed. Lamellar setae more erect, their tips bent. Lamellar tips short, not ending in a pointed tooth (see the two following species). Between the lamellar tips, a dark projection reaches a slit near the tip of the rostrum. Spa.1 broad, reaching halfway to the insertion of the rostral setae. The lamellae diverge anteriorly, thereafter converge at the insertion of the lamellar setae. The bases of the interlamellar setae are surrounded by a dark ring. They are located within a brown figure, pointed anteriorly, ending posteriorly in the lateral margins of co.pm. The interlamellar setae are stiff, distinctly barbed, and about three times as long as their mutual distance. Dorsal pseudostigmatic plates cover the pseudostigmata. Ventral pseudostigmatic plates triangular, with a minute notch in their lateral tip. Sensillus fusiform, the head slightly thicker than the stalk, very pointed at the tip, fig. 3a. Exopseudostigmatic setae absent. Interlamellar wrinkles observed as faint ridges laterally to the interlamellar setae, meeting in front of the latter in a curve. The lateral prodorsal condyles are longish, black, reaching the tip of co.nl, and are shorter than the median prodorsal condyles. The latter are semicircular, blackish, separated by a deep incurvation. The specific name refers to the black condyles.

*Pedotecta* : Pd.1 blackish, coarsely granulate on lateral border, foveolate on dorsal surface. Subpedotectum rough laterally. Pd.2-3 rough, posterior part with irregular ridges surrounding alveoles, Pd.4 ends in a broadly rounded tip.

*Notogaster* : Oval, broadest across ms-ms. Anterior border straight. Surface of notogaster finely punctate, with faint, scattered foveae at a deeper level. Marginal ridge indistinct anteriorly, behind ih a thin unbroken ridge. Lateral notogastral condyles very large, triangular in shape,

their outer margin slightly convex, blackish. Between the lateral condyles there is a slightly curved brown ridge and behind it two dark lines. Ten pairs of long, stiff, distinctly barbed notogastral setae. Ms, r1, r2 and p1 perhaps slightly longer than the remainder, r3 the shortest. The distance

p1-p1 almost twice as long as p1-p2 and equal to p2-p3 and p3-r3. R2-r2 half as long as ms-ms. Glandular opening in front of im, on a level with ti. Ih is located a short distance in front of r3, ips between r3 and p3, ip between p2 and p3.

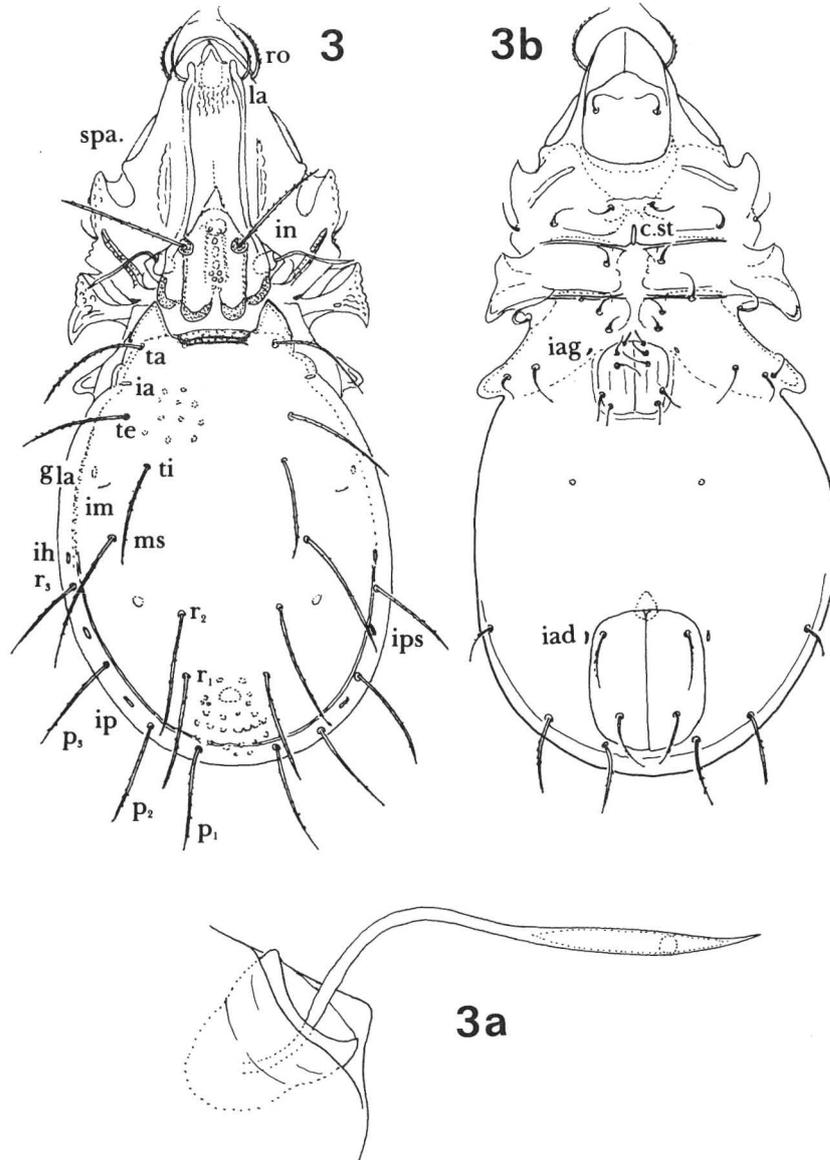


FIG. 3 : *Megalotocepheus nigrolobatus* n. sp.  
3a) sensillus ; 3b) ventral view.

*Epimeral region* : Apo.1, 2 and apo.sj distinctly developed, apo.3 and 4 not observed, fig. 3b. Sternal ridge short, faintly connected with apo.2. The apodemes from the two sides do not meet.

*Epimeral setal formula* 3 : 1 : 3 : 3, most setae are dark, short and curved.

*Anogenital region* : Genital aperture longish, slightly wider anteriorly than posteriorly. Genital

plates with faint longitudinal lines. Five pairs of rather long, strong genital setae. No aggenital setae. Anal aperture longish with parallel sides. Two pairs of long, barbed anal setae. An2 located laterally near the anterior border, an1 in the middle of the plates near the posterior end of the latter. Iad situated off an2. Ad1 an ad2 are longer and thicker than the anal setae, distinctly barbed. Ad3 much shorter. The distance ad1-ad1 is one and a half times longer than ad1-ad2. Ad2-ad3 is twice as long as ad1-ad1.

*Legs* : Type of ultimate setae L-S-S-S.  
165 (1).

**Megalotocepeus undulatus** n. sp. ; fig. 4.

Length about 0.74 mm. Colour light brown.

*Prodorsum* : Rostral and lamellar setae rather short, their tips bent medially ; the rostral setae are more densely barbed than are the lamellar setae. Interlamellar setae stiff, distinctly barbed, about three times as long as their mutual distance. Lamellar tip with a strong spine, fig. 4a, reaching the outline of the rostrum. Two rows of foveae in the space between the lamellae. Spa.1

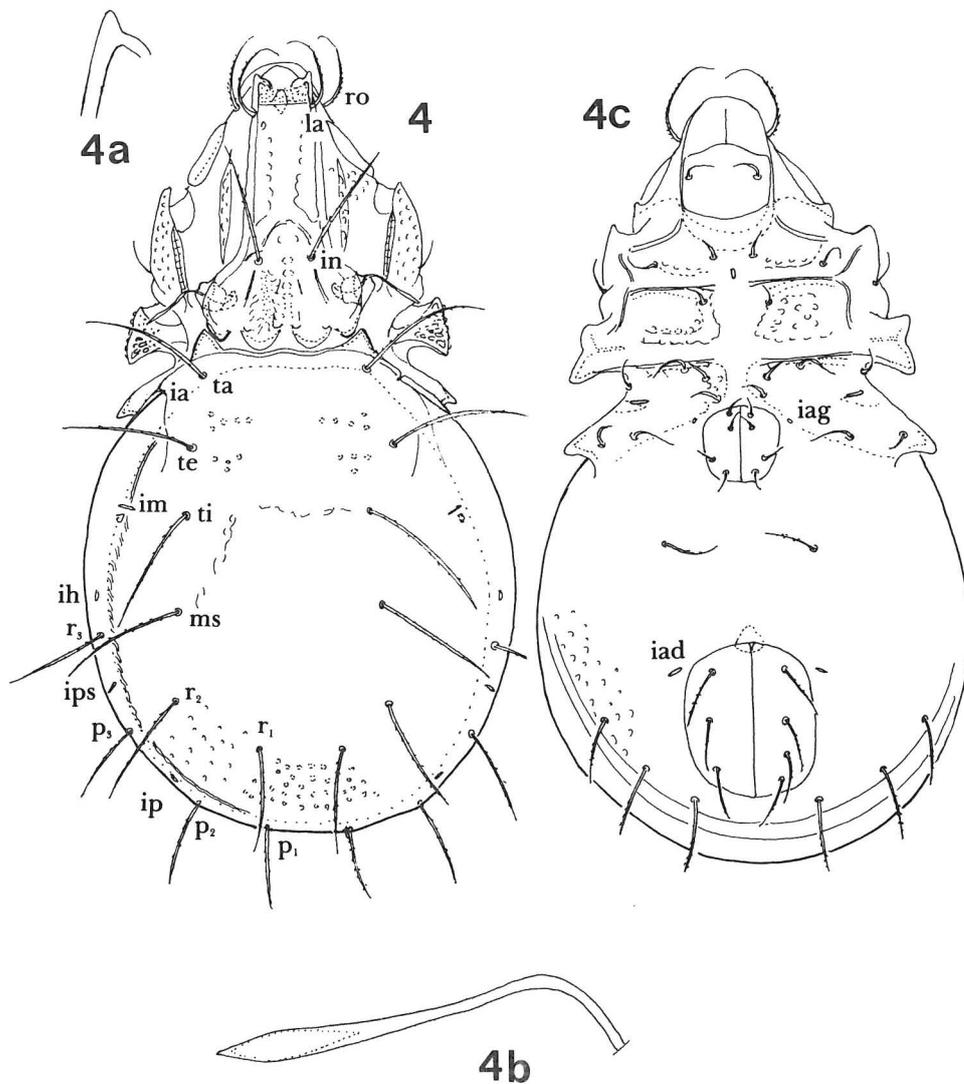


FIG. 4 : **Megalotocepeus undulatus** n. sp.

4a) tip of lamella ; 4b) sensillus ; 4c) ventral view.

very broad, protruding beyond the lateral margin of the prodorsum, reaching two-thirds of the distance to the insertion of the rostral setae. Dorsal pseudostigmatic plates cover the pseudostigmata. Ventral pseudostigmatic plates are slightly angular. Sensillus is fusiform, the head twice as thick as the stalk, ending in a sharp tip, fig. 4b. No exopseudostigmatic setae. Faint interlamellar wrinkles consisting of two thin ridges, one on either side behind the interlamellar setae, and a faint curved ridge in front of the latter. The lateral prodorsal condyles are slightly angular, shorter than the median, semicircular prodorsal condyles, separated from each other by a short distance.

*Notogaster* : Broadly rounded, almost as broad as long. The anterior border undulate (hence the specific name), with two incurvations off the median prodorsal condyles. Surface coarsely punctate or granulate, resembling sand paper. Anteriorly the marginal ridge consists of a thin ridge, behind im, of many short ridges forming an undulating ridge, posteriorly a straighter ridge. Lateral notogastral condyles are triangular, pointed, slightly convex laterally. Ten pairs of stiff, barbed notogastral setae. The distance p1-p2 is slightly shorter than p1-p1. P2-p3 equal to p3-r3. Glandular opening located on a level with ti. The fissure im is situated off ti, ih a short distance in front of r3, ips between r3 and p3, and ip between p2 and p3. Behind r1 are many dark spots, some in front of te.

*Epimeral region* : Apo.1, 2 and 3 distinctly developed, fig. 4c. Apo.3 is very short, apo.4 absent. Sternal ridge very short. Epimeral setal formula 3 : 1 : 3 : 3. Most epimeral setae are thick, short and crooked.

*Anogenital region* : Four pairs of moderately long genital setae. Aggenital setae thin, distinctly barbed. Anal plates with three pairs of long, barbed setae. An3 located near the anterior margin, an2 in the middle of the plates and an1 near the posterior border (a fourth seta is present on the left plate in the type specimen). Adanal setae distinctly barbed, thicker and longer than anal setae. The distance ad1-ad1 twice as long as

ad1-ad2 and ad2-ad3. Iad located obliquely off an3.

*Legs* : Type of ultimate setae L-S-S-S.  
198 (1), 221 (2).

**Megalotocepheus crinitus (Berl.) ; fig. 5.**

Length about 0.97 mm. Colour golden light brown.

*Prodorsum* : Rostral and lamellar setae densely barbed, their tips bent medially. Interlamellar setae, inserted a good distance in front of the pseudostigmata, are about three times as long as their mutual distance, stiff, barbed, and bent outwards. Anterior end of the lamellae pointed, reaching the outline of the rostrum, together forming a transverse concave line. Lamellar tip with a strong tooth, fig. 5a-b. Spa.1 short, protruding beyond the lateral margin of the prodorsum, reaching two thirds of the distance to the rostral setae. Dorsal pseudostigmatic plates cover pseudostigmata. Ventral pseudostigmatic plates triangular. Exopseudostigmatic setae absent. Sensillus is fusiform, hardly thickened at tip, fig. 5c. Interlamellar wrinkles well developed in the shape of four longitudinal ridges located laterally to the interlamellar setae and between the latter. The two medial wrinkles form a figure almost resembling a key-hole. In front of this there is a curved ridge with short irregular ridges running further anteriorly. All four prodorsal condyles are alike, semicircular and well separated.

*Notogaster* : Broadly rounded, with a straight anterior border, broadest across a line ms-ms. Lateral notogastral condyles triangular, very strong. The marginal ridge consists of short oblique lines, absent in front of im. Surface coarsely punctate or granulate, resembling sand paper, with a few confluent foveae. Many dark spots behind r1, a few similar ones in front of ti. Ten pairs of thick, barbed setae, approximately equally long. The distance p1-p2 equal to p2-p3. P3-r3 considerably longer. R1-r1 almost the same as r1-r2, and approximately half as long as r2-r2. Glandular opening located on a level with ti, im immedia-

tely in front of gla, ih in front of r3, ips between r3 and p3, and ip between p2 and p3.

*Epimeral region* : Apo.1, 2 and apo.sj distinctly developed, not meeting those from the opposite side, fig. 5d. Apo.3 very short, apo.4 not devel-

oped. Sternal ridge short, located between 1a. Epimeral setal formula 3 : 1 : 3 : 3. The setae thin, barbed, moderately long. 1b, 3b and 4a are the longest.

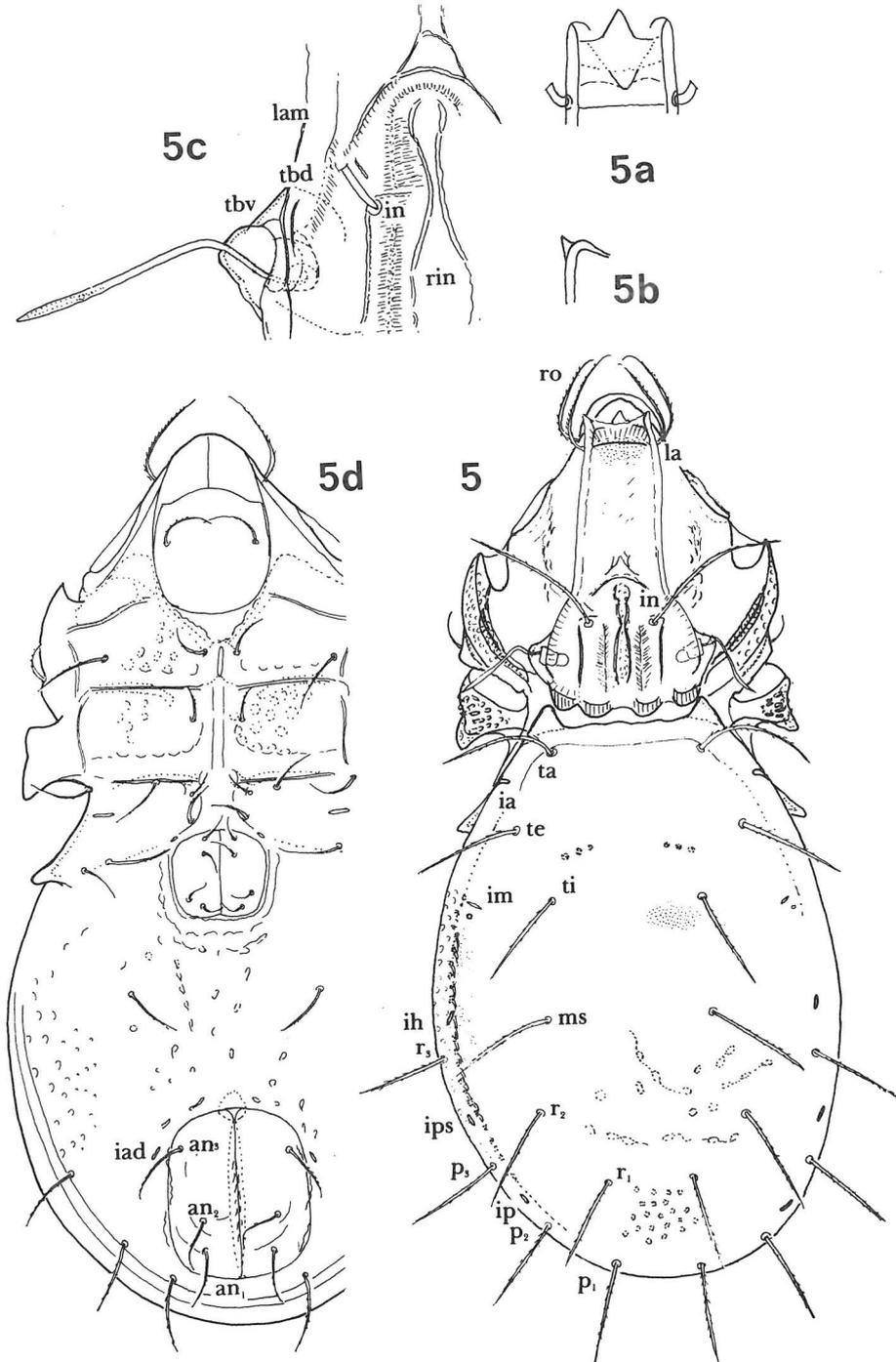


FIG. 5 : *Megalotocepeus crinitus* (Berl.)

5a) anterior part of lamellae ; 5b) tip of lamella ; 5c) sensillus with surroundings ; 5d) ventral view.

*Anogenital region* : Genital aperture brown. Four pairs of moderately long genital setae. Aggenital setae are thin, distinctly barbed. The anal plates have a few wrinkles. There are three pairs of anal setae in all specimens found, one pair located anteriorly near the lateral margin, two pairs in the centre of the posterior third of the plates. Anal setae distinctly barbed, approximately as long as the distance between an1. Iad located obliquely off an3. Adanal setae long and barbed. The distance ad1-ad1 is twice as long as ad1-ad2. The latter shorter than ad2-ad3. Ventral plate punctate or granulate, resembling sandpaper, with faint foveae of different sizes.

*Legs* : Type of ultimate setae L-S-S-S.

*Remarks* : The specimens that I found in Java no doubt represent BERLESE'S species, 1905, p. 172, fig. 46. They resemble *crinitus* apart from their smaller size (*crinitus* is 1.100 mm long), in the pointed lamellar tips, the long interlamellar setae, the long notogastral setae and the distance between the posterior marginal notogastral setae, where r3-p3 is longer than p2-p3. *Tetracondyla crinita* (Berl.), Aoki 1959, p. 10, fig. 7, differs from the specimens described above in the shape of the lamellar tips, the much shorter sensilli, and in the position of the notogastral setae.

22 (1), 24 (1).

#### SUBFAMILY TETRACONDYLINAE

***Dolicheremaeus manifera*** n. sp. ; fig. 6.

Length about 0.63 mm. Colour yellowish.

*Prodorsum* : Rostral and lamellar setae short, finely barbed. Interlamellar setae curved, short, barbed at the tip. Lamellar tips pointed, a membrane apparently proceeds from the lamellar tip to the tip of the rostrum. Spa.1 narrow, straight, reaching the insertion of the rostral setae. Dorsal pseudostigmatic plates cover the pseudostigmata. Ventral pseudostigmatic plates very narrow, hardly projecting beyond the pseudostigmata in a dorsal view ; in a slightly oblique view they are triangular, fig. 6a. Exopseudostigmatic setae thin, located at the tip of the triangular ventral plates. Sensillus is slightly thicker at the tip, which is split up into four branches resembling fingers, fig. 6b. No interlamellar wrinkles. Lateral prodorsal condyles are broadly rounded. Median prodorsal condyles broad, rounded, continuing laterally into a shorter curved ridge. They are separated by a distance half as long as the width of the condyles.

*Notogaster* : Only a little longer than broad. Anterior border straight. Surface densely punc-

tate and weakly pitted, the pits being very small along the lateral and posterior borders. Marginal ridge present as a faint line between ta and te, absent farther posteriorly. Lateral notogastral condyles broad, triangular, partly covered by co.pl. Median notogastral condyles irregular, one rounded, narrow at base, the other broad, triangular, sloping laterally, separated by a distance shorter than the width of the right condyle. Ten pairs of short, uniformly long, thin notogastral setae, barbed distally. Glandular opening located between te and im. Fissure ia is situated in the lateral border between ta and te, im off ti, ih in front of r3, ips between r3 and p3, and ip in front of p2.

*Epimeral region* : Apo.2 and apo.sj well developed, fig. 6c. Apo.3 absent, in this position are two oblique lines. Apo.2 from the two sides meet in a short ridge. Sternal ridge located immediately in front of this ridge. Apo.sj do not meet the opposite one. Epimeral setal formula 3 : 1 : 3 : 3. Median setae short and crooked. Behind 4a and 4c is a curved line with short longitudinal lines issuing from it.

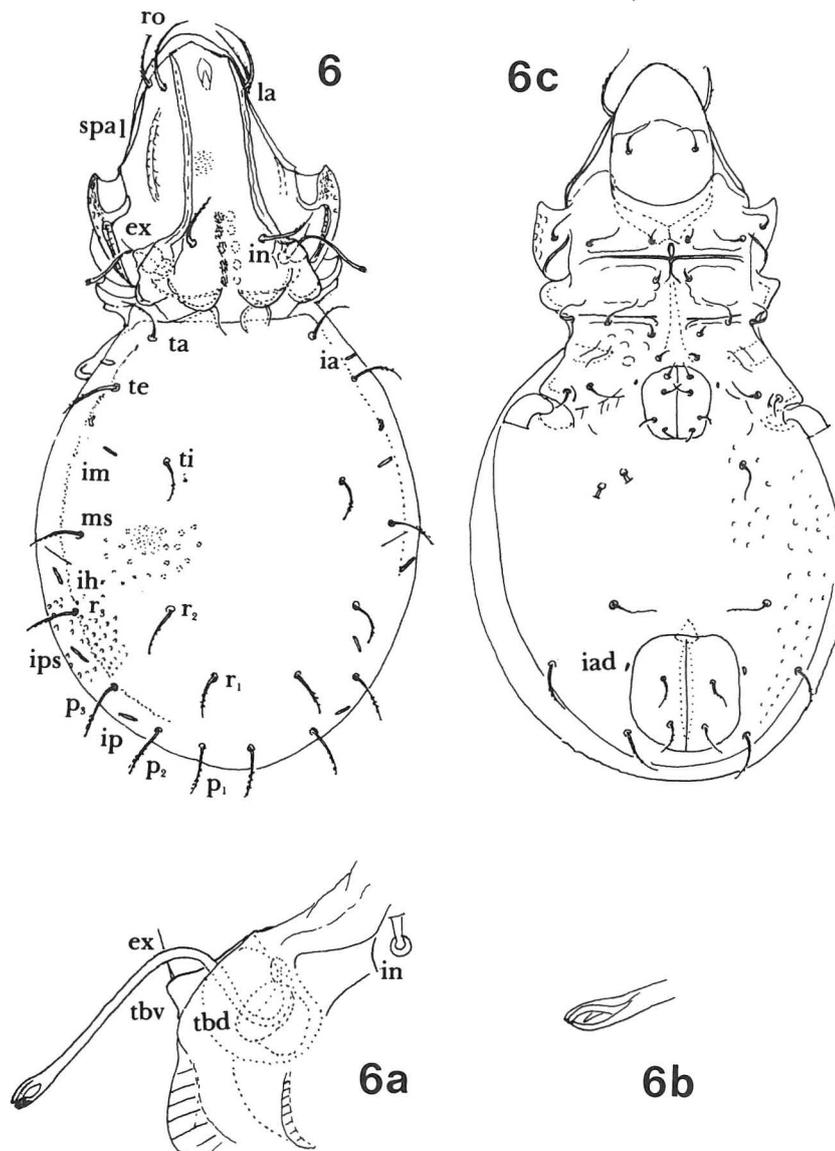


FIG. 6 : *Dolicheremaeus manifera* n. sp.  
6a) sensillus and surroundings ; 6b) tip of sensillus ; 6c) ventral view.

*Anogenital region* : Genital aperture small, brown. Aggenital and adanal setae alike, thin and barbed. Anal setae shorter than the former, barbed. Ad3 preanal, their mutual distance much shorter than ad2-ad2. Iad small, located close to the lateral border of the anal aperture. Ventral plate foveolate.

*Legs* : Type of ultimate setae S-S-S-S.  
183 (1).

***Dolicheremaeus curviseta* n. sp. ; fig. 7.**

Length about 0.62 mm. Colour yellowish light brown.

*Prodorsum* : Rostrum rather narrow, rounded, conical. Rostral setae curved, finely barbed. The lamellar setae have the tip bent strongly ventrally. The lamellar tips continue forwards into a rostral crest. Between the lamellar tips is a longish hole, from the posterior border of which projects a

pointed tip. Interlamellar setae are almost twice as long as their mutual distance, distinctly barbed and dull at tip. Spa.1 do not reach the insertion of the rostral setae. Dorsal pseudostigmatic plates cover the pseudostigmata. Ventral pseudostigmatic plates are triangular. Sensillus is slender. The head, which is split up into four tips, is only slightly thicker than the stem, its shape changing in

different views, figs. 7a-c. Exopseudostigmatic setae slightly roughened. No interlamellar wrinkles. Lateral prodorsal condyles broadly rounded, with a small lateral crest anteriorly, fig. 7a. Median prodorsal condyles semicircular, very broad, separated by a short distance, having a small lateral ridge like the lateral condyles.

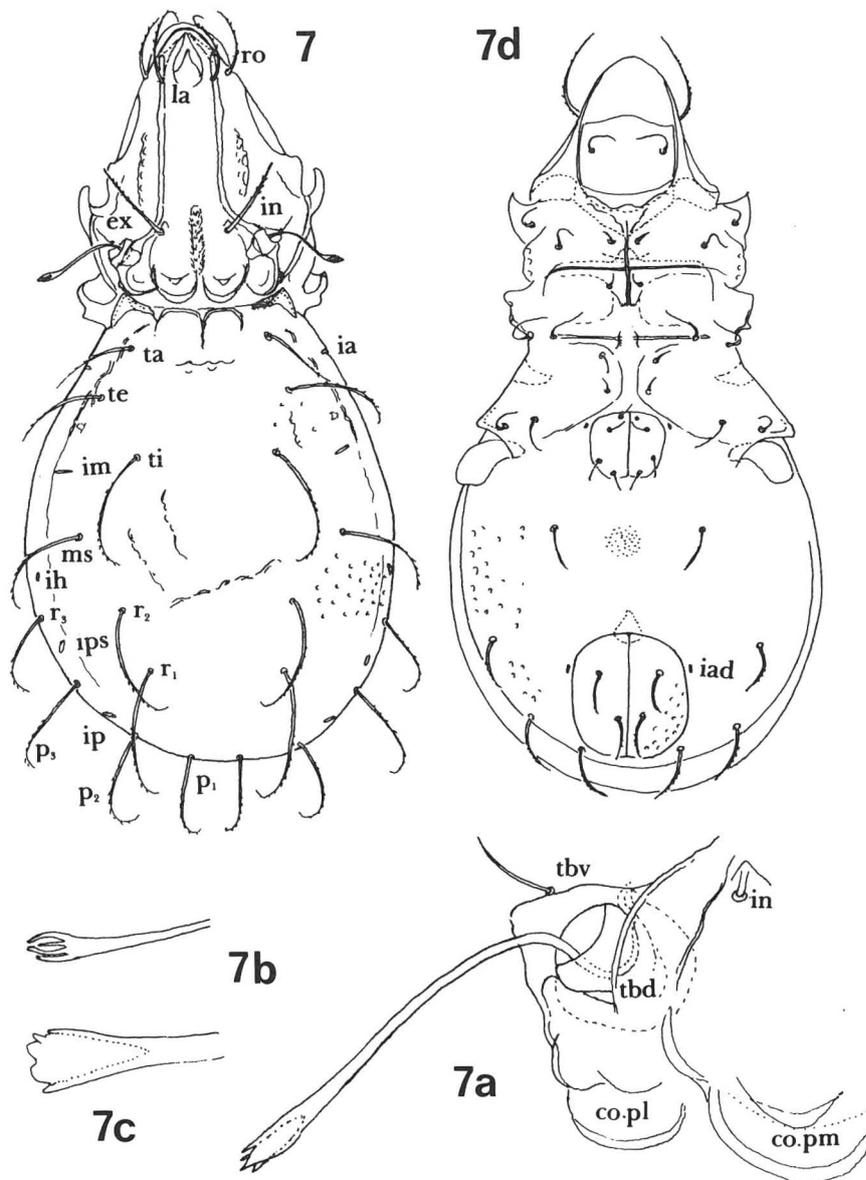


FIG. 7 : *Dolicheremaeus curviseta* n. sp.  
 7a) sensillus and surroundings ; 7b-c) tip of sensillus in different views ; 7d) ventral view.

*Notogaster* : Longish, the posterior half is broadest. Anterior border straight. Surface very finely punctate, foveolate, the foveae moderately large, smaller along the lateral and posterior borders, absent near the anterior border. Foveae sometimes confluent, forming chitinous wrinkles. Marginal ridge present as short oblique lines, ending near glandular opening. Lateral notogastral condyles irregular, consisting of a sharp tooth sloping medially, almost touching the median notogastral condyles. The latter very broad, touching each other, with a flat anterior margin, their medial margins together forming an irregular short ridge. Ten pairs of moderately long, curved setae, thin at the tip, distinctly unilaterally barbed and very thin at the base, which has a minute spur. Ti, r1 and r2 longer than the remainder. R3 the shortest. Gla located between te and im. Fissures im situated on a level with ti, ih in front of r3, ips between r3 and p3, and ip between p2 and p3.

*Epimeral region* : Apo.2 meeting in the middle line, forming a longitudinal ridge, fig. 7d. Apo.sj do not meet in the middle line. Apo.3 absent. No sternal ridge. Epimeral setal formula 3 : 1 : 3 : 3. Median epimeral setae short.

*Anogenital region* : Genital aperture smooth. Four pairs of genital setae, moderately long. Aggenital setae rather thin. Anal and adanal setae strong, curved, unilaterally barbed. The distance ad3-ad3 considerably longer than ad2-ad2. Iad small, located close to the lateral border of the anal aperture, off ad3. Anal plates foveolate. Ventral plate finely punctate, foveolate, most distinctly along the lateral border.

*Legs* : Type of ultimate setae S-S-S-S.  
106 (2), 109 (1).

***Dolicheremaeus lineolatus*** n. sp. ; fig. 8.

Length about 0.77 mm. Colour yellowish-grey.

*Prodorsum* : Rostrum triangular, with a dorsal crest. Lamellar setae longer than rostral setae, all barbed and thin at the tip. Interlamellar setae, located a good distance in front of the pseudostigmata, are more than twice as long as

their mutual distance, stiff, thick, blunt at the tip and finely barbed. Spa.1 strongly curved, concave, not reaching the insertion of the rostral setae. The lamellar tips diverge a little, their anterior border continuing into the dorsal crest. Ventral pseudostigmatic plates broad, triangular with undulating margin. Pseudostigmata light brown, opening obliquely upwards, fig. 8a. Sensillus with a swollen head, apparently ending in two tips, the lower one is very small. Interlamellar wrinkles very characteristic, issuing medially to the interlamellar setae, running in front of the latter, continuing backwards and joining the lateral borders of the median prodorsal condyles. Lateral prodorsal condyles broadly rounded. Median prodorsal condyles broad, with a rather flat posterior margin, separated by a distance half as long as the condyles. Foveolate space between the lamellae.

*Notogaster* : Broad, not much longer than its width. Anterior margin straight. The surface is very finely punctate and irregularly foveolate, foveae being present to the very lateral and posterior borders of the notogaster. The foveae are often confluent and only half of their outline visible, fig. 8b. Marginal ridge only present anteriorly to te. Lateral notogastral condyles sharp, triangular. Median notogastral condyles short, broad, with flat anterior margin like co.pm, separated by a distance like that of co.pm. Ten pairs of notogastral setae, all equally long, thick, dull at tip, and finely barbed, especially at the tip. The distance p1-p1 is the same as p2-p3, and twice as long as p1-p2 and r3-p3. Ti-ti equal to r2-r2. Five pairs of fissures present. Ia is located off ta, im medially to gla on a level with ti, ih a good distance in front of r3, ips between r3 and p3, and ip between p2 and p3.

*Epimeral region* : Apo.2 and apo.sj well developed, not meeting those from the opposite side, fig. 8c. Apo.3 absent. A short sternal ridge present. Epimeral setal formula 3 : 1 : 3 : 3. All setae are moderately long, 3b the longest. 4a and 4c separated by a good distance.

*Anogenital region* : Genital plates with slits or lines (hence the specific name). Anal plates fo-

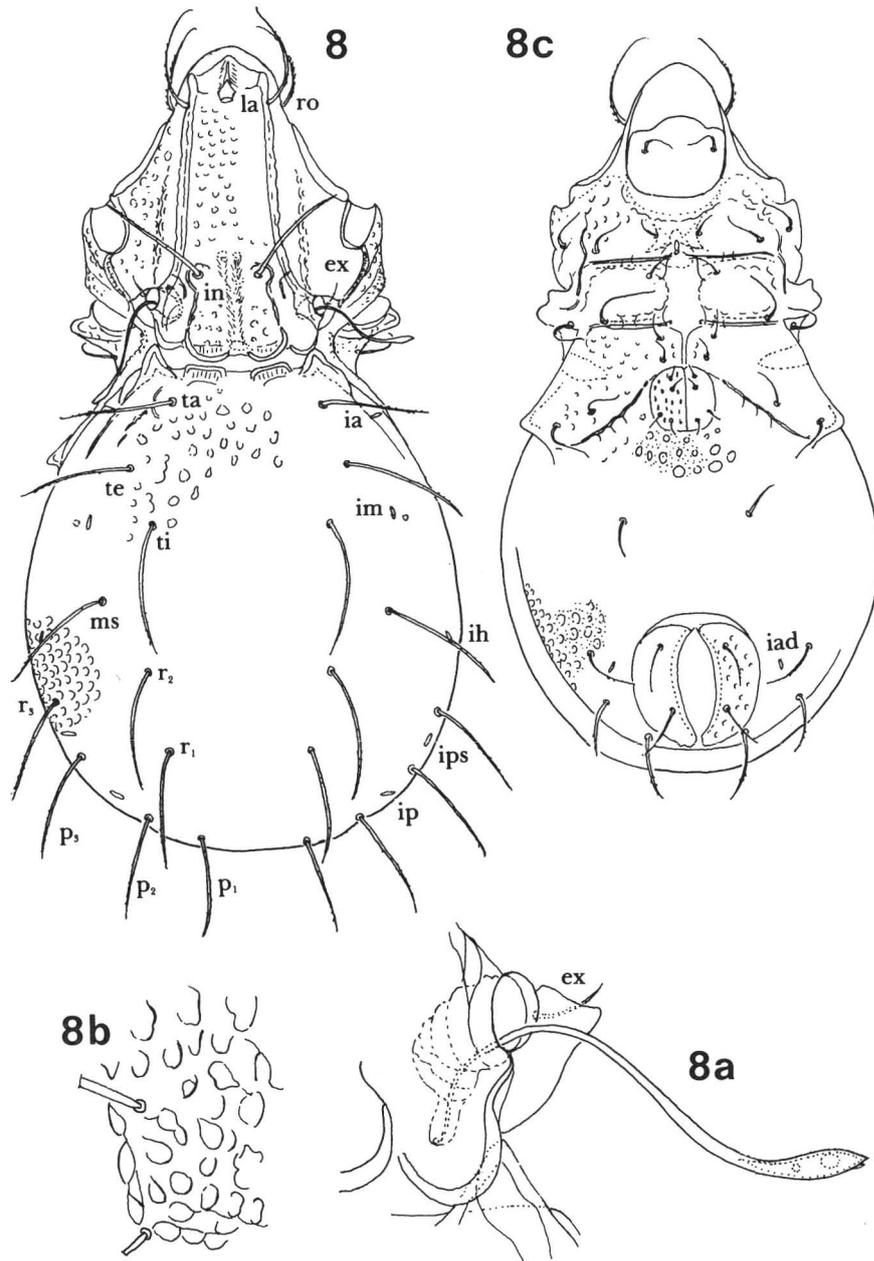


FIG. 8 : *Dolicheremaeus lineolatus* n. sp.

8a) sensillus and surroundings ; 8b) dorsal structure near te ; 8c) ventral view.

veolate. Aggenital setae shorter than anal and adanal setae. Adanal setae thicker and longer than anal setae, all barbed. The distance ad3-ad3 is slightly longer than ad2-ad2. Iad aligned obliquely, removed from anal aperture by a dis-

tance equal to their length. Ventral plate finely punctate and foveolate.

*Legs* : Type of ultimate setae L-S-S-S.

162 (1), 169 (1), 170 (1), 171 (1), 184 (2).

**Dolicheremaeus semilunatus** n. sp. ; fig. 9.

Length about 0.90 mm (male) to 1.02 mm (female).  
Colour light brown.

*Prodorsum* : Rostrum broad, flattened. Anterior border rough, foveolate. Rostral and lamellar setae thin, finely barbed. Lamellar setae considerably longer than rostral setae, meeting in a curve a good distance in front of the rostrum. The inter-

lamellar setae, located a good distance in front of the pseudostigmata, are short, about twice as long as their mutual distance, thick, slightly roughened and dull at the tip. Spa.1 slightly convex, reaching the insertion of the rostral setae. Lateral spots form a dark brown band. Lamellae have broad, triangular, rough tips. Ventral pseudostigmatic plates triangular with an incurvation in the lateral margin. Dorsal pseudostigmatic plates cover the pseudostigmata. The latter are longitu-

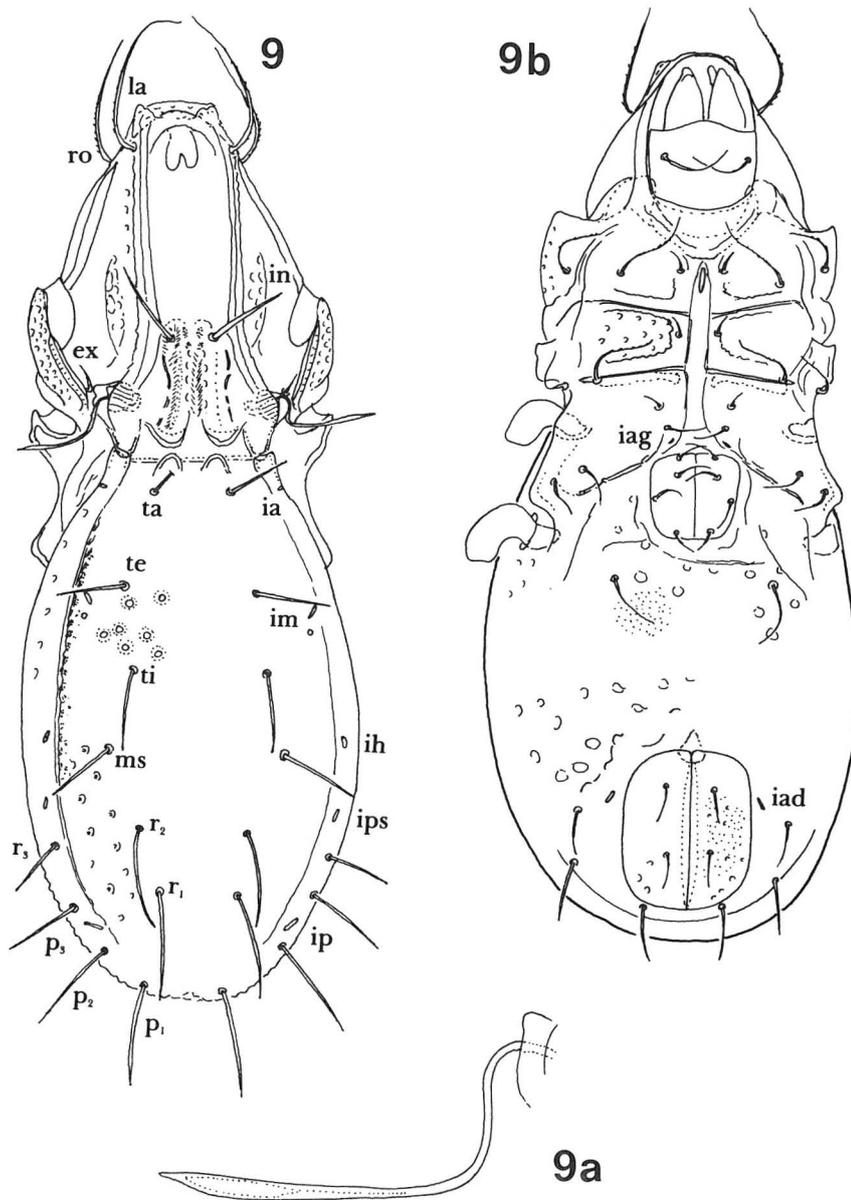


FIG. 9 : **Dolicheremaeus semilunatus** n. sp.  
9a) sensillus ; 9b) ventral view.

dinally striped. Sensillus is very slender, slightly thickened at tip, the latter very pointed, fig. 9a. Interlamellar wrinkles present as short ridges on either side of the densely punctate middle field. In the middle of the latter there are two rows of semilunar short ridges facing each other (hence the specific name). Perhaps they represent the outer rim of deep foveae. The lateral prodorsal condyles are longish, rounded, reaching further backwards than the median prodorsal condyles, which are broader, semilunar and separated by a distance half as long as the width of the condyles.

*Notogaster* : Almost twice as long as broad on a level with *te* (male), in the female it is broader. Surface finely punctate and foveolate, the foveae being scattered and mainly present within marginal ridge. A few, small foveae along the lateral border. The punctuation is arranged more or less in rings around the foveae. The marginal ridge is a smooth band running on a level with *ta* to *r3*, there after it continues as a thin line. The lateral notogastral condyles are square, with a small lateral triangular tooth. The median notogastral condyles are short, conical, separated by a distance corresponding to the width of the condyles, and separated from the lateral condyles by the same distance. Ten pairs of stiff, rather short, barbed setae, dull at tips. *R1*, *r2*, *p1* and *p2* slightly longer than the others. *Ta*, located rather medially, are as long as their mutual distance. *Gla* is located behind *im*. Five pairs of fissures. *Ia* is situated off *ta*, *im* off *te*, *ih* approximately off *ms*, *ips* in front of *r3*, and *ip* between *p2* and *p3*.

*Epimeral region* : *Apo.2* and *apo.sj* well developed, not meeting those from the opposite side, fig. 9b. *Apo.3* absent. Sternal ridge short. Epimeral setal formula 3 : 1 : 3 : 3. Medial setae short and thin. *1b*, *1c* and *3b* much longer, all apparently barbed.

*Anogenital region* : Smooth, brown genital plates. Genital setae long, *gen2* located in the middle of the plates near the lateral margin. Aggenital setae thin, weakly barbed. Anal setae stiff, finely barbed, thinner and shorter than *adanal* setae. The distance *ad2-ad2* slightly shorter than *ad3-ad3*. *Iad* located obliquely to the lateral

margin. Ventral plate finely punctate, with scattered foveae, sometimes confluent.

*Legs* : Type of ultimate setae L-S-S-S.  
105 (1), 190 (1), 199 (2).

***Dolicheremaeus angustus* n. sp. ; fig. 10.**

Length about 0.98 mm. Colour dirty light brown.

*Prodorsum* : Rostrum broad, conical, the surrounding membrane almost semicircular. Rostral setae densely barbed. Lamellar setae longer than rostral setae, less barbed, their tips thin, crossing in front of the rostrum. Interlamellar setae stiff, weakly barbed, and a little more than twice as long as their mutual distance. *Spa.1* reaching the insertion of the rostral setae. Lamellae converge slightly anteriorly. The lamellar tip broad, irregular. Ventral pseudostigmatic plates with a notch in the lateral margin. The very strong exopseudostigmatic setae located off the notch. Sensillus is bacilliform, thin at tip, fig. 10a. Interlamellar wrinkles present as two short oblique ridges, almost reaching the lateral border of *co.pm*. Lateral prodorsal condyles not reaching so far backwards as *co.pm*, rounded. Median prodorsal condyles rounded, touching each other at the base, their lateral margin long.

*Notogaster* : One and a half times longer than broad. Anterior border narrow (hence the specific name), not longer than the distance *ti-ti*. Surface densely punctate, pitted-foveolate, the pits being very small laterally and posteriorly, missing at the anterior border. Foveae sometimes confluent, forming folds. Marginal ridge well developed all the way round. Lateral notogastral condyles broad, triangularly conical with granulate tip. Median notogastral condyles running into one with a flat anterior margin, lateral margins continuing backwards as ridges. Ten pairs of distinctly barbed, stiff setae. *Ti*, *te*, *ms*, *r1* and *r2* a little longer than the others. The approximate length is a little more than the distance *ti-ms*. The setae *ta* are located with a short mutual distance and at a good distance behind the anterior margin of the notogaster. Glandular

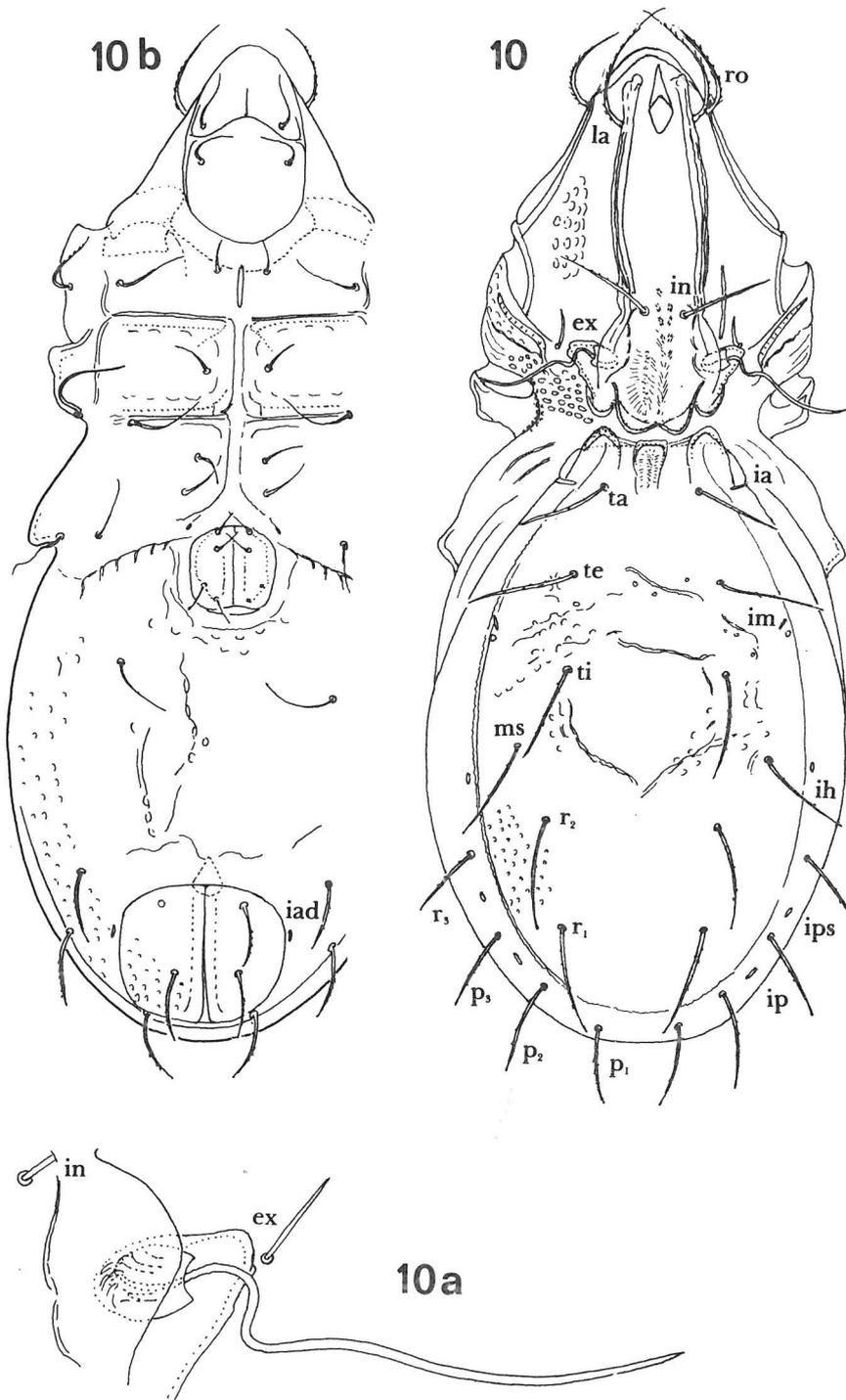


FIG. 10 : *Dolicheremaeus angustus* n. sp.  
10a) sensillus and surroundings ; 10b) ventral view.

opening situated behind im, the latter at a level between te and ti, ih approximately on a level with ms, ips between r3 and p3, and ip between p2 and p3.

*Epimeral region* : Apo.2 and apo.sj well developed, not meeting those from the opposite side, fig. 10b. A short sternal ridge is present. Epimeral setal formula 3 : 1 : 3 : 3, the setae being moderately long and weakly barbed.

*Anogenital region* : Genital plates with thick margins. Chitinous wrinkles surround the genital

aperture. Short parallel ridges run backwards from a curved ridge located laterally to the genital aperture. Long, thin aggenital setae. Anal and adanal setae are almost alike, thicker than aggenital setae and barbed. Adanal setae the stronger. The distance ad2-ad2 apparently slightly longer than ad3-ad3. Iad is located close to the lateral margin of the anal aperture. Ventral plate foveolate, wrinkled.

*Legs* : Type of ultimate setae S-S-S-S.  
225 (1).

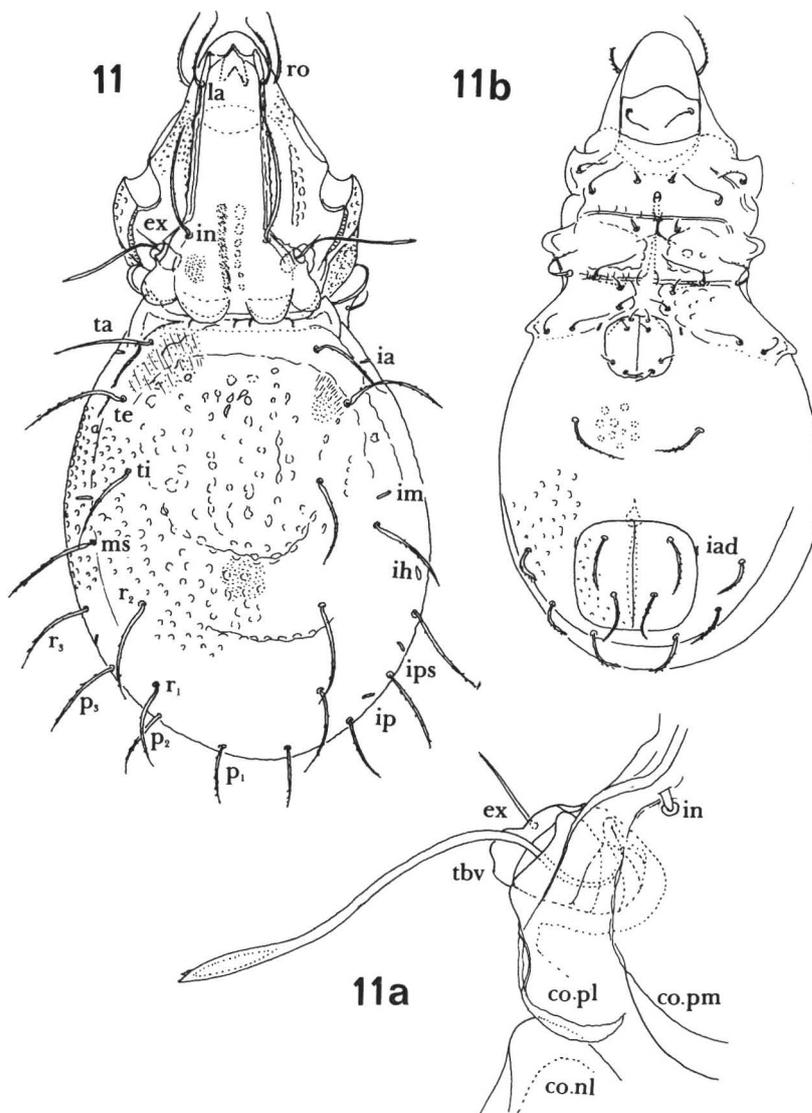


FIG. 11 : *Dolicheremaeus granulatus* n. sp.  
11a) sensillus and surroundings ; 11b) ventral view.

**Dolicheremaeus granulatus** n. sp. ; fig. 11.

Length about 0.69 mm. Colour yellowish-white.

*Prodorsum* : Rostral and lamellar setae short, densely barbed. Interlamellar setae located close to the lamellae, behind the lamellar bending. They are about twice as long as their mutual distance, stiff, distinctly barbed, diverging at their base. Spa.1 short. Lamellae with irregular lateral borders, converging anteriorly, their tips thin, pointed, continuing into a dorsal crest on the rostrum. The surface lateral to the lamellae is granulate (hence the specific name). Dorsal pseudostigmatic plates almost cover the pseudostigmata. Ventral pseudostigmatic plates rounded laterally, with a notch in the anterior margin, fig. 11a. Sensillus has a slightly thickened head, bifid at tip. Interlamellar wrinkles issue in front of the interlamellar setae, continuing as faint lines into the lateral margin of co.pm, fig. 11a. Lateral prodorsal condyles are broad, rounded. Median prodorsal condyles very broad, almost semicircular, separated by a short distance less than half the width of the condyles.

*Notogaster* : Broadly rounded, only a little longer than broad. Anterior margin straight. Surface very finely punctate and foveolate. Foveae present to the borders of the notogaster, except at the anterior border. They are irregular and often

confluent, forming wrinkles. Marginal ridge only present anteriorly, approximately to te. Lateral notogastral condyles large, triangular. Median notogastral condyles very flat, perhaps running into one, if present at all, hidden below co.pm. Ten pairs of almost sickle-shaped, distinctly barbed notogastral setae ; very thin at the base and approximately equally long, p1 being slightly shorter than the others. Gladular opening located between te and im, i.e., far anteriorly. Fissures im situated a short distance in front of ms, ih in front of r3, ips between r3 and p3, and ip between p2 and p3.

*Epimeral region* : Apo.2 meets the opposite one in the middle line, apo.sj do not meet, fig. 11b. Apo.3 absent. Sternal ridge very short. Epimeral setal formula 3 : 1 : 3 : 3. Median seta short, the remainder moderately long and barbed.

*Anogenital region* : Genital plates smooth. Aggenital setae distinctly barbed, as long as the anal and adanal setae, but thinner. Anal and adanal setae thick and bent slightly medially, barbed. The distance ad2-ad2 shorter than ad3-ad3. Anal plates foveolate. Iad minute, located close to the lateral border of the anal aperture. Ventral plate punctate and foveolate.

*Legs* : Type of ultimate setae L-S-S-S.  
180 (1).

*à suivre...*